

WHAT IS CLAIMED IS:

1. A stabilizer bar for an automotive vehicle, said bar comprising:
  - first and second torsion rods which are aligned along an axis;
  - a coupling including first, second, and third coupling members, the first
  - 5 coupling member being connected rigidly to the first torsion rod, the second
  - coupling member being connected rigidly to the second torsion rod, the third
  - coupling member being movable axially, but not rotationally, with respect to the
  - first member and together with the first member enclosing a cavity, the volume of
  - which depends on the axial position of the third member with respect to the
  - 10 second member, the second or third members having ramps which control the
  - axial position of the third member relative to the second member and relative to
  - the first member, with the axial position being dependent on the degree of
  - relative rotation between the first and second members, whereby the volume of
  - the cavity depends on the angular position of the first member relative to the
  - 15 second member;
  - a fluid in the cavity; and
  - a valve connected with the cavity for controlling the flow of fluid displaced
  - from the cavity as relative rotation occurs between the first and second coupling
  - members.
- 20 2. A stabilizer bar according to claim 1 wherein the fluid is at least in
- part magneto-rheological with the rheological portion being in the valve, and the
- valve includes an electrical coil for controlling the viscosity of the fluid in it.

3. A stabilizer bar according to claim 2 wherein the valve contains a restriction and the coil controls the viscosity of the fluid at the restriction.

4. A stabilizer bar according to claim 1 wherein the ramps on the second and third coupling members are separated by rolling elements which  
5 bear against the ramps.

5. A stabilizer bar according to claim 1 wherein the second and third coupling members are located within the first coupling member.

6. A stabilizer bar for an automotive vehicle, said stabilizer bar comprising:

10 first and second torsion rods which are aligned along an axis;

a housing connected to the first torsion rod such that it will rotate with the first rod;

a rotor located within the housing and connected to the second rod such that it will rotate with the second rod; the rotor having ramps;

15 a piston located within the housing such that it can shift axially with respect to the housing, but not rotationally, the piston together with the housing defining a cavity, the volume of which depends on the axial position of the piston in the housing, the piston having ramps which are presented toward the ramps on the rotor and cooperate with the ramps on the rotor, as a consequence of  
20 relative rotation between the rotor and the piston and housing, to determine the axial position of the piston in the housing and the size of the cavity;

a fluid in the cavity of the housing; and

a valve for controlling the flow of fluid displaced from the cavity when the cavity decreases in volume.

7. A stabilizer bar according to claim 6 and further comprising rolling elements between the ramps on the rotor and the piston.

5 8. A stabilizer bar according to claim 7 wherein the housing has a splined socket and the piston has a splined stub shaft which projects into the splined socket with the splines on the piston and in the socket being engaged, so that the piston may shift axially, but cannot rotate, with respect to the housing.

9. A stabilizer bar according to claim 6 wherein the fluid is at least in part rheological, and the rheological portion of the fluid is in the valve.

10 10. A stabilizer bar according to claim 9 wherein the fluid is magnetorheological at the valve, and the valve contains a restriction and a coil which produces a magnetic flux at the restriction, thus controlling the viscosity of the fluid at the restriction.

15 11. A stabilizer bar according to claim 10 wherein the valve includes a housing that contains a chamber and also includes a restrictor in the chamber to provide the restriction, the coil being located in the restrictor.

12. A stabilizer bar according to claim 9 wherein the ramps on the rotor and piston are arranged in pairs, with the ramps of each pair descending to a valley between those ramps.

20 13. In combination with a structural component of an automotive vehicle and with left and right control arms that pivot on the structural component about axes that extend generally longitudinally of the vehicle, the stabilizer bar of

claim 6 wherein the first torsion rod is connected to one of the control arms through a first torque arm and the second torsion rod is connected to the other control arm through a second torsion arm.

14. The combination according to claim 13 wherein the torsion rods are  
5 attached to the structural component with the housing and rotor being located between the locations where the torsion rods are attached to the structural components.